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MSTA

Montana Science Teachers Association

Volume 5, No. 2 March 1986

In Memoriam:

Seven Stars

by Doris Simonis

It was the best of times: excitement, adventure, futuristic technology, and a teacher involved in it all. And it was the worst of times: unexpected disaster, disappointment, death.

How can we reconcile the tragedy of public loss of real people we admired, and our hopes for space science and technology as avenues of peaceful, productive extension of the human spirit? I have no ready answers. However, I have found some comfort in the viewpoints of children (first appearing in February issues of the *Missoulian)* and in a poetic speech my brother, David Gibson, wrote a week after the Challenger exploded. In anticipation that most teachers will appreciate them, they are included in this newsletter.

Dreams, Death, & Destiny

by D. W. Gibson
1122 Diamond Avenue
S. Pasadena, CA 91030

When I was a child I used to dream.

I used to dream wonderful dreams,
great and glorious dreams,
exciting and heroic dreams.

When I was a child, the twilight of sleep was an adventurous experience that I enjoyed.

But no more, for now I am an adult; and I have put aside those things of a child.

And now sleep is no more than a necessity, no more than a thief in the night.

And when Morpheus, the god of dreams, slips past my guard... the shadowy phantoms provided are murky, anxious things that welcome the dissipating light of dawn.

Those glorious and exciting dreams of youth have faded; those wonderful and heroic dreams of youth are gone; and I miss them, I miss them dearly.

And that is why I can find no sympathy, no sympathy at all for those seven astronauts who died last week in the space shuttle explosion.

For they died living an exciting adventure,
a once in a lifetime adventure...
an adventure at the frontier of science,
at the frontier of knowledge,
at the frontier of space.

They died living a dream, a great and glorious dream.

Oh, I am sorry for those who knew them, loved them, and suffer for their loss.

But then I'm also sorry for those who have never had the opportunity to embark on such a great adventure.

I'm sorry for those who find life drab and dull;

Grown-ups with nothing to expect any more,
Who no longer grow;
no longer improve,
no longer dream.

Grown-ups who have come to full stop.

What a disaster—grown-ups thinking they have arrived.

So I want to become a child again.

I want to see things with a child's eyes;
to welcome new things with a child's excitement
to learn new things with a child's sense of wonder.

I want to renew that sense of adventure that rightly belongs to each moment of life.

I want to renew that ability to dream

Wonderful and glorious dreams,
exciting and adventurous dreams.

For when we stop dreaming, we stop trying.
and when we stop trying, we stop growing.
and when we stop growing, we begin to die.

A Tear Drop

Moist and soft
Filled with thoughts
A drop of emotion released
Exposed to the air
Falling
Fading
Weakening the sadness
Gina Brock
Grade 8
Washington School
Missoula, MT

One day, a teacher and mother of two children wanted to go up into space in a space shuttle called Challenger. She was on television quite often. Her name was Christa McAuliffe.

Then, the day came when she and six others would climb aboard the shuttle. I don't really think Christa was nervous, just excited. Almost everybody that was there to watch the Challenger waited patiently for takeoff. Five, four, three, two, one, the Challenger instantly whirled into the air. After they were about ten miles into the air, a great tragedy occurred. The Challenger, in the blink of an eye, exploded into millions of pieces and fell down, down into the Atlantic Ocean. Christa and six others are believed to be dead.

Some people are very curious as to what happened to the Challenger. Some people are blaming NASA, while others are blaming the shuttle itself. The space program is very upset..."What happened? What made the Challenger explode?" Nobody knows right now, and people are starting to get very worried because NASA can't send another shuttle up until they find out exactly what happened to the Challenger. Do you know?

Kendra Hagan
Grade 5
Frenchtown School
Frenchtown, Montana

To The Astronauts

They took off yesterday
with a hug and a wave.
There's nothing but good-byes
Just a quick brightness in the sky
We love them and will miss them
and may God please bless them.

Tami Johnson
Grade 7
St. Regis School
St. Regis, MT

Tragedy in Space

by Grade 1
Potomac School
Potomac, MT

I am scared. I went to space. If it was my teacher, I'd be scared. *Melissa Regan*

I like to go in a rocket. I'd be dead if it blew up. *Richie Bush*

It exploded because of a leak. But I don't know for sure. *Brandon Redman*

It went to space and it exploded and it smoked and I don't know who it was, but not my teacher. *Colin Cordell*

I'm glad that's not my teacher that went up in space. *Beth Conley*

I'd feel sad if it was my teacher. *Jeremy Hamilton*

I'd feel very sad if I was one of the kids. It turned into a fireball. *Jason James*

The Coast Guard is still searching for the little and big pieces. They fell into the sea. *Jay Iverson*

1½ minutes it sploded. Everyone died in the space shuttle. *Mike McKinley*

I am sad. I miss her. *Guy Dufresne*

How did it explode? I want to know. If it was teacher, I would feel sad. *Luke Meyer*

The girl died. Students, we feel bad and we won't have a new teacher. *Missy Denman*

I wish she didn't die. I feel very very very very very very very very bad. *Lee Tolle*

Montana Academy of Science Convenes in Dillon April 4-5

Both scientists and science educators will meet at Western Montana College in Dillon, MT for the 1986 annual meeting of the Montana Academy of Science on Friday and Saturday, April 4 and 5.

The Montana Academy of Science, incorporated in 1961 as a non-profit educational organization, provides opportunities for teachers, state government officials, local scientists from industry and government agencies, and university professors to share their work and their concerns over issues that affect the people and resources in Montana. The science and math teaching section is usually a sizable one, providing Montana teachers a second opportunity each year for sharing, learning, and growing professionally. (The first opportunity is the annual MSTA conference in October.)

Opportunity does knock twice in Montana! Answer the call and meet us in Dillon this spring.

Nominations Now Being Accepted

Nominations are currently being accepted for the 1986 Outstanding Biology Teacher Award for the state of Montana. The award program, conducted by the National Association of Biology Teachers is intended to identify and reward excellence in biology teaching by selecting an outstanding biology teacher in each of the 50 states. The program is sponsored by Silver Burdett Company which presents each award winner with a world-class pair of binoculars. In addition, winners also receive certificates, as well as public recognition and professional satisfaction. Award recipients will be invited by NABT to a special luncheon to honor awardees, held in conjunction with NABT's National Convention in Baltimore, MD, in October, 1986.

All biology teachers of grades 7-12 in public or private schools, who teach primarily life sciences, are eligible for nomination. Membership in NABT is not required. Candidates may be renominated in subsequent years. Nominations can be made by colleagues, administrators, students, the teachers themselves, or anyone else competent to judge the candidate's teaching effectiveness, ability, experience, inventiveness, and inherent strength in teaching biology.

The deadline for submission of completed application materials is **April 15, 1986.** Anyone wishing to receive application forms should submit a nominating letter as soon as possible to: Craig Kuchel, State OBTA Director, Florence-Carlton School, 5540 Old Highway 93, Florence, MT 59833.

Montana Science Teachers Newsletter is published quarterly by the Montana Science Teachers Association and the State Office of Public Instruction.

Editor is Doris Simonis, School of Education, University of Montana, Missoula, MT 59812. Send her your activity suggestions, comments, articles, and news about science teachers and science education you'd like to share.

Subscription is $8.00 annually. Send your check, made out to MSTA, to Ken Price, President, MSTA, Helena High School, Helena, MT 59601

Science Safety Workshops: Opportunity for Teachers

Russ Hartford and Gary Freebury of Flathead High School and Paul Markovitz of MSU have developed a timely workshop and a team of instructors to make science teachers, principals, and administrators more knowledgeable about responsibility for laboratory safety in schools. There is still time to take advantage of their programs. Five more workshops are scheduled for spring:

April 11-12—Miles City; 2-day workshop
April 24—Montana State University, Bozeman; sessions for University personnel only.
April 25-26—Bozeman, workshop for teachers, principals, and administrators.
May 2-3—Great Falls, workshop for teachers, principals, and administrators.
June 16-20—Bozeman (University pre-session)

Teachers and principals have the option of earning two credits for this graduate course. For more information, phone Russ Hartford at 755-7310 or Paul Markovitz at 994-5952.

Summer School Courses for Montana Teachers

Wildlife artist Carolyn Petty will present her nationally acclaimed STAR award workshop, *Integrating Science and Art*, on the University of Montana campus June 30-July 3, 1986. The four-day workshop carries two graduate/undergraduate credits and includes watercolor and opaque painting, step-by-step drawing, problem-solving, comparative anatomy, and science facts reinforced by hands-on experiences and art techniques.

Science educator and award-winning author Vicki Cobb ("Bet You Can't," "Science Experiments You Can Eat" and two dozen other books) will conduct a two-day workshop on developing inquiry skills through science activities for elementary and middle school students. Teachers and parents can take Cobb's sessions (only July 7-8, 1986) or they may take a three-credit, every afternoon course July 7-17 with Dr. Simonis on *Science Activities for Children*. Cobb's introductory workshop is included in the graduate-level course.

Teachers, principals, and administrators will find *The Schoolbook Selection Controversy: Policies and Procedures* a stimulating and practical workshop. Ways to defuse creationism-evolution debates, implications of the Hatch-Denton amendments, and other curriculum and censorship issues will be addressed by Dr. Edward Jenkinson, professor at Indiana University and author of *Censorship in the Schools*. Sponsored by the University of Montana Chapter of Phi Delta Kappa, this two-day workshop, June 23-24, 1986, carries one graduate credit. Parents, school board members, and other auditors are welcome.

For more information on the above-mentioned workshops, call Continuing Education, 243-2900 or Doris Simonis, 243-5204, at the University of Montana.

Please note additional summer opportunities for you that are described elsewhere in this issue: NEWMAST workshops and Science Safety Workshops for Teachers.

NEWMAST Honors Workshops Touch the Heart of Space Science

During the past two summers 400 science and math teachers have had the opportunity to immerse themselves in America's space program. After spending two weeks at a NASA center, these honors teachers were able to bring the space program back to their classrooms in the form of NASA resources, an intimate knowledge of the function of NASA's research centers and the newest technological information. These winning teachers attended the NEWMAST Honors workshops.

The National Aeronautics and Space Administration and the National Science Teachers Association are pleased to announce the continuation of the NASA Education Workshops for Math and Science Teachers (NEWMAST) for the summer of 1986.

The nine Newmast workshops for outstanding math and science teachers take place at NASA centers. The workshops are sponsored by NSTA in cooperation with the National Council of Teachers of Mathematics and supported by NASA. Teachers become involved in a broad range of activities which gives them an overall view of space endeavors. Information/resources provide them with the means to set up a network that can be shared with students and peers.

The response of the winning teachers who attended the past workshops was overwhelmingly positive:

"It was most refreshing to attend a workshop at which one had the opportunity to interact with professionals in research and development so that one could investigate the applications of the concepts taught in the classroom." *Harold Lefcourt, NEWMAST winner.*

"100 workshops in one." *Ralph Munger, NEWMAST winner.*

"We were able to talk with...the creators of change themselves." Antoinette Podesto, NEWMAST winner.

Science and math teachers, grades 7 through 12 in public and private schools in the U.S., are eligible.

Nominations must be postmarked by **April 15, 1986.**

For more information, please write: NEWMAST, National Science Teachers Association, 1742 Connecticut Ave., NW, Washington, DC 20009

Natural Egg Decorating

Preparing the eggs: Eggs take color better if you wash them in sudsy water first.

Utensils: It's best to color eggs in enamel, steel, or glass cooking pans.

Dyes: You can dye eggs with natural dyes from fruits and vegetables. The following list shows which colors you can get from various foods:

Food	Color
Red Cabbage Leaves	blue
Spinach	goldish pink
Carrot Tops	greenish yellow
Yellow Delicious Apple Peels	lavender
Onion Skins	orange
Orange Peels	yellow

Procedure: To dye eggs naturally, fill a pan with enough water to cover them. Add a teaspoon of vinegar. Add a few skins or leaves. Simmer or slowly boil for about 20 minutes.

Variations:

Plaids—Fasten strips of masking tape around a dyed egg and dip it into another color. Always use the light color first.

Marbleized—Using an egg dyed in a lighter color, wrap it in a piece of cloth. Tie it at the top. Dip it into darker dye. Let it dry before you unwrap it.

Leaf—Wrap a leaf around an egg that is dyed in a light color. Tie it in a piece of nylon stocking. Dip it into a darker color. Let it dry before unwrapping.

WORMS, WORMS, WORMS!

by Mary K. Evans, 898 South Green Road
Cleveland, Ohio 44121

1. Muscular "grinder" in an earthworm's digestive system
2. Role of hookworm in humans
3. Immature worm form
4. Flatworm phylum
5. Worm symmetry
6. Earthworm "rings"
7. Roundworm phylum
8. Earthworm bristles
9. Flatworm found in snails, fish, & humans
10. Tapeworm body sections
11. Upper lip of an earthworm
12. Digestive storage area in earthworm
13. To avoid this worm, wear shoes!
14. Worm "hearts"
15. Segments 32 to 37 in an earthworm
16. Light sensitive area of a planarian
17. Worm slime
18. Segmented worm phylum
19. Exit for earthworm castings
20. Middle tissue layer
21. Head end
22. Intestinal roundworm which passes from human to human
23. Organism on which a parasite lives
24. Planarian or tapeworm
25. Porkworm
26. Organs of excretion in earthworms
27. "Throat"
28. Form of trichina in pork, for example
29. Mass of nerve cells
30.

Green Jeans Horticulture...Alive and Very Well at Baker High

What started as an outdoor project in 1975 on Baker High School's campus has blossomed into a highly successful and popular curriculum. The course was devised to accommodate students of average and below-average academic ability and to provide them with practical horticultural experiences. After planting over 2000 trees that first year, a 12x16 foot greenhouse was added with the aid of a $3000 ESEA Title IV incentive grant in 1977.

The response was so great we had to expand our greenhouse to 12x40 and have two separate classes in 1979. Another ESEA Title IV grant was awarded that year, this time for $7000. We added computer equipment including a color graphics system that enabled us to make floral arrangements, plan gardens, and monitor the greenhouse. This grant also allowed students who normally wouldn't come into contact with computers to gain some valuable experience.

With the aid of grants from the Title IV YCCIP program during 1980-82 we paid students to work in the program part-time during the school year and full-time in the summer. These grants totaled more than $30,000 and represented an enormous boost to the program.

Many worthwhile projects were completed in Fallon County and all are still in use today.

During 1982-83, an incentive Nutrition Education grant for $5,300 was awarded. This enhanced Green Jeans Horticulture by enabling students to grow and prepare foodstuffs, learn their nutritional importance, prepare menus for food service and home use, and develop a cost analysis of such an enterprise. In cooperation with Mealtime III classes, a salad bar and tasting table were developed for sampling by hot lunch participants or by the senior citizen center.

Currently, there is a surplus of edible materials being produced by the Green Jeans program which result in some 120 pint jars of jelly from plums and apples harvested from trees in the shelterbelt. These products are given away to faculty, staff, and parents in the fall. Herbs, greens and berries produced in the greenhouse or shelterbelt are often used in home economics classes for some very tasty dishes.

Regular practical studies are given on topics such as plant propagation, soils, fertilizers, pesticides, use, maintenance, and repair of garden tools, pruning, lawns, floral arranging, and landscaping. Green Jeans owns and operated two 7 h.p. roto tillers for soil conditioning and a tree limb shredder-chipper for mulch and composting projects.

In cooperation with Home Economics classes, this program continues to instruct students in the nutritional value of food and its relationship to human health and mental and physical well-being.

The vocational and recreational aspects of the biological sciences are fast becoming as important in education as those programs written especially for the academically talented and college-bound student. The biology department at Baker High School has never lost sight of designing programs to meet the needs of all students at the secondary level. Worthwhile programs such as Green Jeans gives each participant a sense of pride and accomplishment and demonstrates that if the right teaching techniques are used, then students are willing to learn.

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When asked to name the "one person who has been most influential in the development of my career," the students among the Honors Group in the Forty-fourth Annual Science Talent Search for the Westinghouse Science Scholarships and Awards responded:

134 named teachers, heads of science departments, or principals in elementary, junior or senior high schools

105 named scientists and engineers connected with colleges, universities, industries, research centers, hospitals and clinics, or museums

41 named their fathers

5 named students

3 named their brothers

2 named their mothers, 2 named their aunts, 2 named their sisters, and 2 named their uncles

1 named both parents

"Science teachers and other school personnel are often unaware of their impact upon their students' lives. These statistics indicated that science teachers are indeed a positive influence in the development of creative minds."

From the STATellite, April, '85, the Science Teachers Association Texas newsletter)

Secondary Student Training Programs Summer 1986

For the past 25 years the University of Iowa has provided enrichment experiences in science for over 3,700 secondary students. The goals of the program are to: supplement the high school curriculum; stimulate student interaction with scientists and educators; facilitate career planning and decision making; provide a smooth transition from high school to college; provide opportunities for enrichment and acceleration in science; and allow students to take an active role in science.

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The **Research Participation Program** has been designed to provide students with the opportunity to observe and study in a research laboratory under the supervision of research scientists. Instead of attending classes or lectures, the participants work and study in a laboratory of their interest. One student is selected for each of the approximately 75 positions in various science and science-related areas.

The objectives of the Research Program are to demonstrate the nature of scientific research by providing firsthand experience in research laboratories under the guidance of research scientists; stimulate superior students by familiarizing them with the daily activities of the scientists; supplement usual high school activities with some real experiences in scientific research; and verify or alter supposed interests in scientific careers in research. The student will spend approximately eight hours a day, five days a week in a research laboratory.

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The **Course-Centered Research Programs** are designed to incorporate creative problem solving techniques and apply them to the disciplines of biology and physical science. Each student will participate in activities focusing on how to identify and select researchable questions/topics. Students will develop a research proposal, participate in on-site laboratory visits, learn basic computer skills, be introduced to statistics and the planning and design of experiments, and interact with research scientists. These activities will be approximately 50 percent of the course. The other half of the course will provide students the opportunity to explore either the biological or physical sciences in greater depth. Such study is designed to provide fascinating glimpses of these fields at the threshold of research and discovery. Both group and independent study will have a research project ready for implementation upon the completion of the program. This will enable students to pursue competitive science events such as science fairs, talent searches, and symposia, as well as learn the basic skills and knowledge essential to conduct scientific research at the secondary level.

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The **Yellowstone Program** is an outdoor field study course designed to utilize the natural environment as the subject for study. The program is interdisciplinary in focus and emphasizes the awareness of current environmental problems and suggests actions which are deemed important if not vital to the future of our planet. Instruction emphasizes the processes of science as well as incorporating personal development and growth activities. In order to facilitate observations and investigations in the "back country," hiking, backpacking, and canoeing are made integral aspects of the camp-study program.

Limited funds will be available to provide scholarships.

Detailed information is available upon request. Please write to: Iowa-SSTP, 455 Van Allen Hall, The University of Iowa, Iowa City, IA 52242 (319)353-4102. Toll free numbers: Within Iowa (1-800-272-6412, ext. 4102), Contiguous states (1-800-553-6380, ext. 4102).

Making a Nut Candle

Idea from New Jersey Science Teachers Association

Teaching chemistry with food in the elementary classroom is not only educationally sound, but also nutritious in some cases. The following is a simple demonstration using fat.

Materials:

a pecan or English walnut
a golf-ball size chunk of modeling clay for candle holder
a nutcracker
a match

Directions:

Crack nut and remove nutmeat carefully.
Break one-half of a nutmeat into two quarters.
Insert the nut into clay holder with broken edge of nut facing up.
Ignite match to light "candle."

Observations:

The fat in the nutmeat vaporizes and is burned. This is an example of rapid oxidation of a fat. Temperature determines if a substance is a fat or an oil. Cooling will cause oils (liquids) to become fats (solids). Heating will reverse the process.

The Earth As An Apple*

Consider the earth as an apple. Imagine the following sequence:

Slice an apple into quarters. These represent the oceans of the world. The fourth quarter roughly represents the total land area left.

Slice this land quarter in half, giving you two 1/8th world pieces. Set aside one of the pieces. This is land inhospitable to people—the polar areas, deserts, swamps, very high or rocky, mountainous areas. The other 1/8th piece is the land where people live, but not necessarily grow the foods needed for life.

Now slice this 1/8th piece into four sections, giving you four 1/32nd pieces. Set aside three of these pieces. These are areas too rocky, too wet, too cold, too steep, or with soil too poor to actually produce food; they also include the areas of land that could produce food but are buried under cities, highways, suburban developments, shopping centers, and other structures that people have built.

This leaves us with a 1/32nd slice of the earth. Carefully peel this slice.

This tiny bit of peeling represents the surface, the very thin skin of the earth's crust upon which mankind depends. Less than five feet deep, it is quite a fixed amount of food-producing land.

Now you realize that protecting our land resources are important too. Advanced agricultural technology has enabled the world to feed many of its people. But, with a fixed land resource base and an ever increasing number of people trying to feed themselves from the fixed base, each person's portion becomes smaller and smaller and more important to the individual person. We must protect the environmental quality of our air, water, and land.

*Reprinted from *Introduce Science to Students Using the Environment*, by Deborah Richau, Poly Drive School, Billings, MT.

Won't
You
Drop
Us
A Line
From
Your
Web
Of
Ideas?

Richard Menger
Did!!

Snow Snakes

from ISTA *Spectrum*, Winter 1985, Illinois Science Teachers Association

You'll need:

An empty plastic bleach bottle
A short piece of rope
An old smooth broom handle for each player
Paste wax on a rag

Make a Snow Trench

1. Tramp down a straight trench on flat ground 10 m (20 feet) long and 10 cm (4 inches) deep.
2. Fill the bottle with hot water. Cap it and tie the rope around its neck.
3. Drag the bottle along the trench to make it smooth and slippery. Ask someone to press down on the bottle while you pull it.
4. Mark a starting line at one end of the trench.

Make A Snake

Decorate the broom handles so they look like snakes. If you want to, polish them with paste wax and rub hard to make speedy snakes.

How to Play Snow Snakes

Each player takes a turn throwing his or her snake along the trench until everyone has thrown. The player whose snake goes farthest wins one point. (Snakes that land out of the trench don't count.) Pick up the snakes, go back to the starting line and throw again. Keep playing until someone has collected 10 points.

Launching Your Snake

Kneel beside the trench at the starting line. Hold your snake parallel to the ground with one hand under its head and the other at its tail. Hook your index finger over the end of the tail. Swing your arms back and forth a couple of times; then, keeping the head of the snake higher than the tail, thrust it forward.

National Science Week 1986 Scheduled for May 11-17

Congressional Resolution for National Science Week 1986

Urge your Congressional Representatives to cosponsor H.J. Resolution 484 and your Senators to cosponsor S.J. Resolution 251. Call or write them today!

A joint resolution has been introduced in Congress designating May 11-17, 1986 as National Science Week to focus the nation's attention on the importance of science and technology.

The National Science Foundation (NSF) is coordinating the week's activities which are expected to include the efforts of thousands of individuals and organizations.

House Joint Resolution 484 is sponsored by Representatives Don Fuqua (D-FL), Manuel Lujan (R-NM), Doug Walgren (D-PA) and Sherwood Boehlert (R-NY) and requires the cosponsorship of 218 members of the House for floor action. In the Senate, S.J. Res. 251 was sponsored by Senators Orrin Hatch (R-UT) and Slade Gorton (R-WA).

The joint resolution points out the vital role science and technology play in improving the quality of life. The resolution also notes that the nation's rate of scientific discovery and technological innovation is growing more rapidly than ever before, and that our nation's leadership is being increasingly challenged by foreign countries.

While National Science Week '86 is structured to reach many segments of the general public, its primary aim is to communicate with today's young students who will be the scientists, researchers, engineers, teachers, and citizens of tomorrow.

The first National Science Week, held in May 1985, involved schools and universities, libraries and museums, professional organizations, businesses, and individuals in all fifty states, plus the territory of Guam. Special exhibits, lectures, student and teacher awards, workshops, research facility open houses, outreach programs and many other activities were planned as part of the week.

Corporate sponsors for National Science Week include: Amoco Foundation, Atlantic Richfield Foundation, the Dow Chemical Company Foundation, DuPont Company, Eastman Kodak Company, the General Electric Foundation, and IBM.

Soap Testing

(Suggested for grades 2-4)

Published by *Elementary Science Newsletter*, March 1978

Materials

Baby food jars
Soap
Phenolphthalein solution

Procedure

In cold weather many people are concerned with irritated or chapped skin. It is interesting to determine whether the family soap is too strong.

Collect an assortment of baby food jars, or other small clear glass jars. Have children bring a small clear glass jar. Have children bring a small scrap, or about 2 teaspoons of scrapings from the family soap. Place each brand in an individual jar and fill with enough water to dissolve soap. Add to each jar a few drops of phenolphthalein solution or ½ tsp. phenolphthalein. Mix well.

If the mixture turns dark pink, it is very strong and the soap is caustic. If the solution is white or light pink, the soap is mild and, therefore, less irritating to the skin.

Last step: Change brands of soap based on your results.

Teacher's Note:

Phenolphthalein can be secured from a junior high or senior high science laboratory. Students must be cautioned not to taste or drink the phenolphthalein indicator. The teacher should obtain safety advice from a qualified chemistry teacher.

From Illinois Science Teachers Newsletter, I.S.T.A. *SPECTRUM:* Vol. 8, No. 2, winter 1982)

Seat Belt Science: Activities for General Science

Studies have consistently shown that the widespread use of seat belts could significantly reduce injuries and fatalities in automobile accidents. Seat belts are standard equipment on all autos today, yet they are not widely used. It is hoped that this teaching packet will show students that choosing to use seat belts is an intelligent decision to make when they drive or ride in an automobile.

Students in 9th and 10th grade are close to driving age. If students are informed and convinced about the effectiveness of seat belts, it is more likely that they will develop and keep the habit of using seat belts.

Automobile accidents are the leading cause of death for people under the age of 44. Over four million people per year are injured in automobile accidents. There are countless other statistics about auto accidents that are chilling, yet the Department of Transportation estimates that only about 11 percent of the population use seat belts regularly.

Several lessons in this packet apply scientific principles to the use of seat belts in automobiles. A variety of activities are presented including the film "Dynamics of a Crash," laboratory exercises relating to the **forces and times** of automobile accidents, class discussion about the film and labs, and written work, either in class or as a homework assignment.

Experts say that if all people driving or riding in autos were to wear seat belts, 15,000 lives per year could be saved in the United States alone.

It is hoped that the students will understand the forces in automobile collisions and the probability of being involved in such collisions. This knowledge will hopefully result in increased seat belt use.

Teachers may want to conduct their own survey of seat belt use before and after teaching this unit. Compile the results of the survey in Activity 1 to find the "before" figures. Then wait a month or so before giving the survey again.

Overall objects of this unit:

Upon completion of this unit, the student should be able to:

Understand and calculate the forces involved in automobile collisions

Determine his/her own reaction time

List and understand reasons for wearing seat belts

Understand the results of various studies concerning seat belt effectiveness

Additional Sources of Information

"Automobiles and Collisions," by Frederick Cranston.
This is an "issue oriented module" which can be obtained from American Association of Physics Teachers, Publications Department, Graduate Physics Building, S.U.N.Y., Stony Brook, NY 11794 ($1.35).

"Packaging Passengers," from the Ginn and Company, 1515 series
191 Spring Street
Lexington, Massachusetts 02173

The following pamphlets may be obtained from:
U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, DC 20590

"The Automobile Safety Belt Fact Book"
"The Human Collision"
"Physics and Automobile Safety Belts"

Some other films that are available from the Department of Transportation are listed below. For information on these films, write to the above address for the U.S. Department of Transportation.

"You Bought Them" (3½ minutes)
This film shows a comparison of unbelted passengers with belted passengers in automobile collisions.

"Egg, Pumpkin, Headache" (3 minutes)
This film is made up of three public service announcements about seat belts.

"Children and Infants in Car Crashes" (5 minutes)
This film examines the problems of unrestrained children in car crashes.

Workshop Announcement

The Universe in the Classroom, a national workshop on teaching astronomy in grades 3-12, will take place during the 98th annual meeting of the Astronomical Society of the Pacific, July 12-14, 1986 at the University of Colorado in Boulder, CO.

The workshop will include sessions on classroom activities and resources, non-technical lectures by noted astronomers, hands-on groups working with simple telescopes and binoculars, and tours of local astronomy facilities. The program is designed for people *without* extensive background in science. Credit will probably be granted through the university, and inexpensive dormitory accommodations will be available.

Further details will be available in Spring 1986. To get a complete brochure and registration packet, send a legal-sized, stamped, self-addressed envelope to: Summer Workshop, A.S.P., 1290 24th Avenue, San Francisco, CA 94122.

Annual Summary of MSTA Income and Expenses

submitted by Gil R. Alexander, Treasurer
January 6, 1986

Income

1984 Balance	$ 279.96
1984 Fall Conference memberships (received in 1985)	2,176.31
1985 Fall Conference (net income)	2,307.40
Additional Memberships	32.00
1985 Interest on Savings	137.26
	4,932.93
Expenses	1,192.40
	$ 3,740.53

Expenses

Safety Facilitator Training	$ 400.00
Incorporation fee	5.00
Phone expenses	367.52
MSTA newsletter	404.88
Printing for Fall Conference	15.00
	$ 1,192.40

Intermountain Junior Science and Humanities Symposium Update

General Information

The 24th Intermountain Junior Science and Humanities Symposium was held at the University of Utah, March 5-8, 1986. The Symposium is a three-day program for high school students and their science teachers and is concerned with research in science-related areas, including engineering and mathematics. The program included:

Observation of research projects conducted by university scientists who discussed their methods and explained their goals;

Professional lectures and discussions given by noted research scientists and humanists;

Presentation of student research papers describing *research projects* the students have completed under the direction of their high school teachers;

Opportunities for students and teachers to interact with participating scientists as well as with other students and teachers regarding their specialized interests.

Delegates

The five intermountain states—Utah, Colorado, Montana, Idaho, and Nevada—are assigned quotas of both students and teachers, based upon past participation, interest and the amount of funding available. Student delegates should be from grades 10 and 11; however, *seniors may also be chosen if they submit research papers.* All student delegates must have a cumulative GPA of 3.0 on a 4.0 scale. Teacher delegates should have a background in science or mathematics. Permission to attend may be granted to eligible persons **only** by the Symposium Director upon **written** request of the sponsoring high school.

Because of the large demand by Montana students, a statewide selection is made by a committee of science teachers. All Montana students have completed research papers.

Montana was granted a total of 27 official student delegates and 6 teachers.

Sunburst School: Kim Kretchman, Sheila Knaup, Michell Horgus, Cristi Heavirland, Amy Ryan, Ernie Lee, Nate Clark, Celine Stoltz, Herb Stahl, Thom Peltier.

Browning: Roylene Doore, Robert Parsones.

Missoula Sentinel: Brian Sperry, Jennifer Rosquist, Jill Frazier, Jason Patent, Karl Boehm, Andrea Nybo, Sam Ming, Chad Sage, Brian Custer.

Belgrade: Lisa Todd.

Big Sandy: John Cavitt, Shannon Rutledge.

Missoula Big Sky: David Gordan.

The May issue of the MSTA Newsletter will have details from our Montana delegation.

Answers to WORMS, WORMS, WORMS!

1. Gizzard	16. Eyespot
2. Parasite	17. Mucus
3. Larval	18. Annelida
4. Platyhelminthes	19. Anus
	20. Mesoderm
5. Bilateral	21. Anterior
6. Segments	22. Ascaris
7. Nematoda	23. Host
8. Setae	24. Flatworm
9. Liver Fluke	25. Trichina
10. Proglottids	26. Nephridia
11. Prostomium	27. Pharynx
12. Crop	28. Cyst
13. Hookworm	29. Ganglion
14. Aortic Arches	30. Planaria
15. Clitellum	

Montana Science Teachers Association
Application Form

Name _____
City _____
County _____
Business Address _____
_____
_____
Home Address _____
_____

Grade Level	Grades Taught	Subject Area
☐ Elementary	_____	_____
☐ High School	_____	_____
☐ College	_____	_____

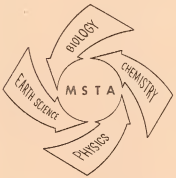
MSTA will help the individual participate in determining the destiny of science education in Montana. The organization serves as a vehicle for educators from all professions to exert positive influences on young people. Many important decisions concerning the scope and direction of science education will be strongly influenced by our organization.

The MSTA goals are to increase public awareness, interest and support of science education in Montana.

Membership Dues are $8.
Make checks payable to:

MSTA
Ken Price, President
Helena High School
Helena, MT 59601

Montana Science Teachers Association



Dedicated to quality science education

Office of Public Instruction
Ed Argenbright, Superintendent
State Capitol, Room 106
Helena, MT 59620